

Notes on the fecundity and longevity of *Curetis acuta* Moore (Lepidoptera, Lycaenidae)¹⁾

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Abstract A hibernating female of *Curetis acuta* Moore from Fukuoka city was examined to determine longevity and fecundity in captivity. Possible implications of the results are discussed.

Key words Curetinae, *Curetis*, *Curetis acuta*, fecundity, longevity, Japan.

Introduction

Curetis acuta Moore, 1877 is one of the common species in Japan and is distributed from Honshu to the Nansei Islands (Fujioka, 1975; Fukuda *et al.*, 1984). In the southern area of Kyushu, it appears in 3 or 4 broods in a year and overwinters in the adult stage (Shirôzu & Hara, 1962; Fukuda *et al.*, 1984). The adult has three forms of wing shape, as follows; 1) a summer form with wings weakly angulated, 2) an autumn form with wings strongly angulated and 3) an intermediate form between the two. Most individuals that pass the winter safely are found in the autumn form (Nishiyama, 1981, 1982; Fukuda *et al.*, 1984). Although the hibernating females lay eggs on flower buds and sprouts of legumes such as *Wisteria floribunda* [Fabaceae] in the spring, their fecundity and longevity have not been reported to our knowledge.

In the spring of 2001, the senior author collected a hibernating female of *C. acuta* which was laying eggs on flower buds of *W. floribunda* in Fukuoka city. This female was of the autumn form. Reared for egg-laying, she showed a remarkable fecundity and longevity. The result is shown below and discussed briefly.

Materials and methods

A hibernating female of the lycaenid butterfly, *C. acuta*, was used for this experiment. This individual was collected at Mt Nishiaburayama, Fukuoka city, on April 23, 2001. It was reared in a plastic case (3 cm diameter, 6 cm height) of which the top and bottom were covered with nylon net, and placed in an incubator (20±1°C; 14L-10D). A 20% honey solution was used as food. The food was usually given every two days at a fixed time (22:00).

The egg-laying experiments were carried out between 14:00 and 18:00 hours in an outdoor cage (25 cm diameter, 32 cm height), which was made of nylon net with a circular wire frame

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at the top and bottom. The temperature of the shaded area in the cage was 25–30°C. The cage was hung about 1 m above the ground. Sprouts of *W. floribunda* were attached to the top of the cage for laying eggs, and the female was released into the cage. The experiments were conducted every two days, but were postponed for one day because of bad weather.

Results and discussion

The results are shown in Fig. 1. The total number of eggs was 343. The peak in egg-laying for the female was from late April to early May. Although the number of eggs laid decreased with time, high fecundity was maintained until late May. Thereafter, a remarkable decrease in the fecundity was observed, from early June, and some infertile eggs appeared mixed in from late June to mid July. It is said that the hibernating female of this species begins to lay eggs from late March in Kanagawa Pref. (Ashizawa, 1980) and Kyushu (Fukuda *et al.*, 1984). In fact, when our female was collected, it was laying eggs on flower buds of *W. floribunda* and many eggs and first instar larvae were found on the hostplant. It is therefore inferred that the female had also laid many eggs before being captured and that the female of *C. acuta* lays more than 400 eggs when kept in good condition.

After capture on April 23, 2001, the female survived 87 days and died on July 18 (Fig. 1). Since this female showed the characteristics of the autumn form, its eclosion was estimated to be September or October of the last year. Thus its complete lifetime is considered to be 10–11 months. As far as we know, there is no such long-lived example in other multivoltine and hibernating butterflies, except for some cases of *Melanitis phedima* (Cramer, 1780) (Hohsai, 1996, 2001; Shirôzu, 2000; Ishijima & Nakajima, 2001; Morita, 2001). It is a general opinion that the lifetime of the hibernating female of this species lasts until the end of May in the warm-temperate zone of Japan, and an individual reported for the rather cold area of Honshu (Fukuda *et al.*, 1984) is the only case which survived to July. Although the experimental conditions used, including the food, were probably more desirable than in the field, our female was collected in a warmer area (Fukuoka city) and the experiment was

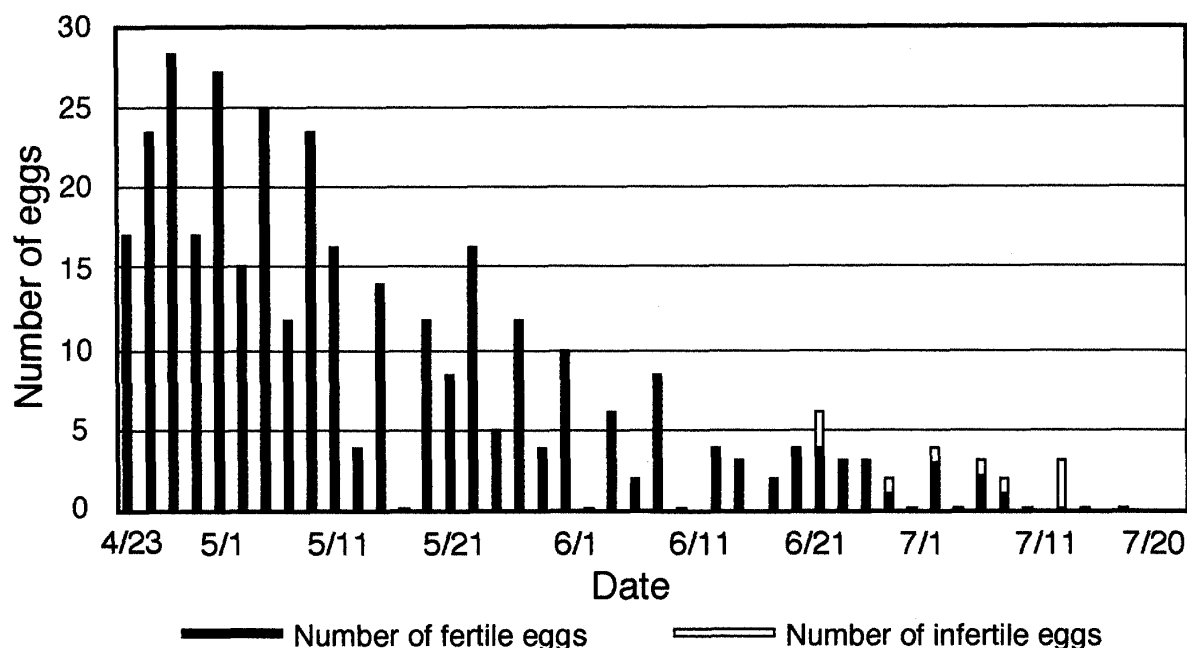


Fig. 1. Daily record of the number of eggs laid by a female of *Curetis acuta* in captivity.

conducted under conditions which were comparatively close to the climate in the field. According to our field observation, *C. acuta* has three broods or more in Fukuoka city, as follows; 1) the first generation, peaking early June, 2) the second from early to middle July, 3) the third from early to middle September, and 4) probably the fourth in October. This life cycle corresponds closely to that reported for the southern area of the Kyushu mainland (Fukuda *et al.*, 1984). Our female died shortly after the second peak. That was the season when the hostplants began to come out again and many females were observed laying eggs. In short, our female survived and continued to lay until the time when the second generation began to fly in the field. Although our result was obtained under artificial environmental conditions, there is the possibility that butterflies of the hibernating generation and the second generation fly together in the warm-temperate zone of Japan.

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摘 要

ウラギンシジミ (鱗翅目, シジミチョウ科) の蔵卵数と寿命に関する知見 (矢後勝也・矢田 脩)

2001年4月23日、福岡市西油山にて採集されたウラギンシジミ *Curetis acuta* Moore, 1877の越冬個体1♀を用いて採卵実験を行ったところ、蔵卵数と生存日数に関する著しい結果が得られた。この個体はやや汚損していたが、翅型は明らかに秋型の特徴を表わしており、前年秋に羽化した越冬個体と判断された。筆者らは本個体を用いて、原則として1日おきに採卵実験を行った。実験にはナイロン製のネットでできたケージを使用し、食草としてフジの新芽を入れ、午後の一定時間に高さ約1mの屋外で採卵した。また採卵時以外の時間帯はインキュベーター (20±1°C; 14L-10D) による室内保管を行った。その結果、本個体は捕獲後87日間生存し、その間の産卵総数は343卵を記録した。本個体の産卵能力のピークは4月下旬から5月上旬で、その後、日々の経過につれて産卵数の減少が見られたが、7月中旬に死亡するまで本個体は確実に有精卵を産んでいた。本種の越冬♀は神奈川県や九州では3月下旬から産卵を始めるといわれており、それゆえ本個体も採集以前の時点で、すでにかかなりの卵を産んでいたと想像される。本種の♀は条件が整えば、おそらく約400卵あるいはそれ以上の産卵能力を持つものと考えられる。本個体は明らかに越冬個体であるので、その羽化は前年の9月から10月に行われたとすると、本個体は10から11ヶ月間生きていたと考えられる。筆者らが知る限り、多化性かつ成虫越冬するチョウでこのような長期生存するものは、国内ではクロコノマチョウ *Melanitis phedima* (Cramer, 1780) (法西, 1996, 2001; 白水, 2000; 石島・中島, 2001; 森田, 2001) を除いて他にいない。

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